FIG. 1

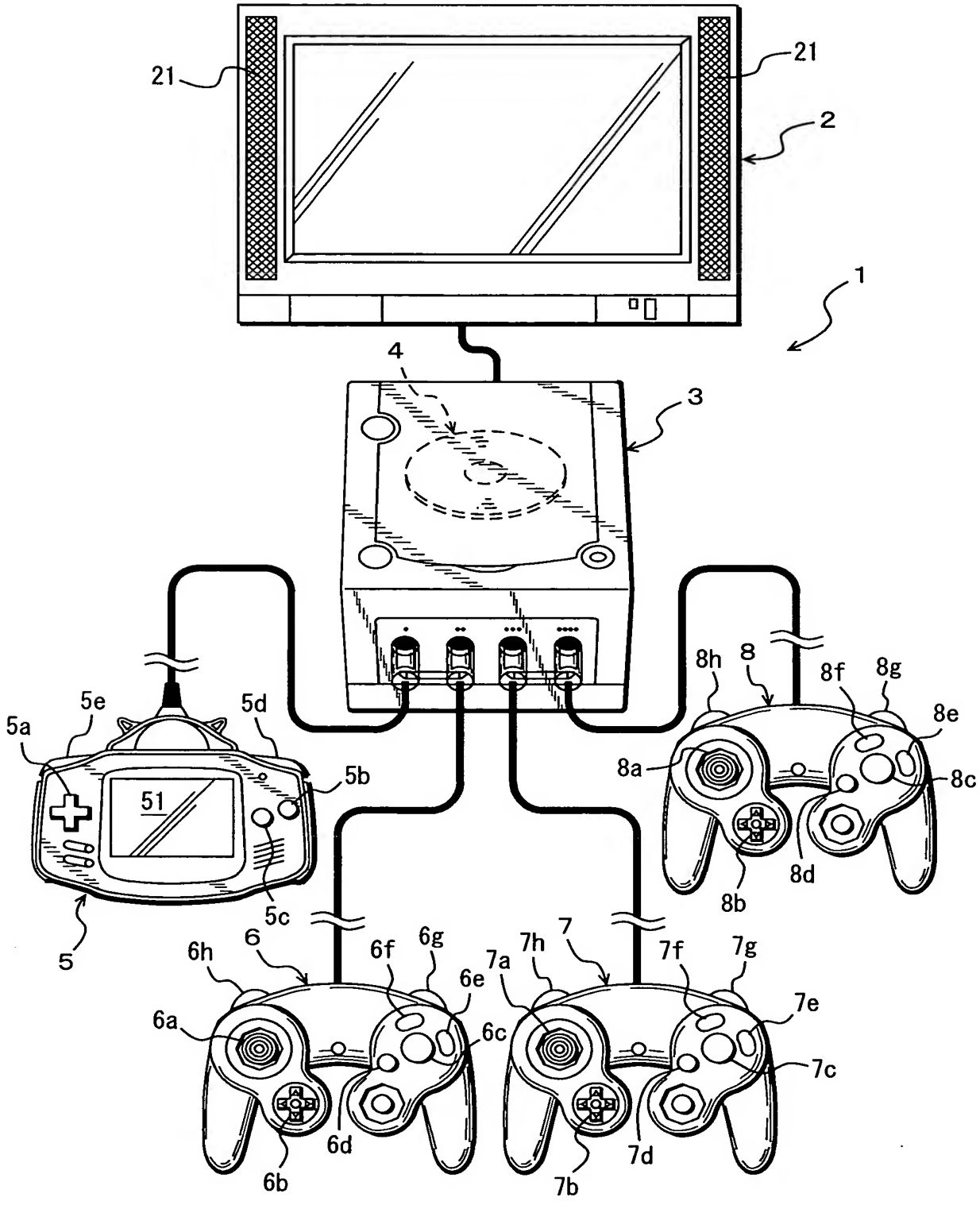

21
21
2
1
4
3
5a
5e
5d
5b
51
5c
5
8h
8
8f
8g
8e
8a
8c
8b
8d
6h
6
6f
6g
6e
6a
6c
6d
6b
7a
7h
7
7f
7g
7e
7c
7d
7b

FIG. 2

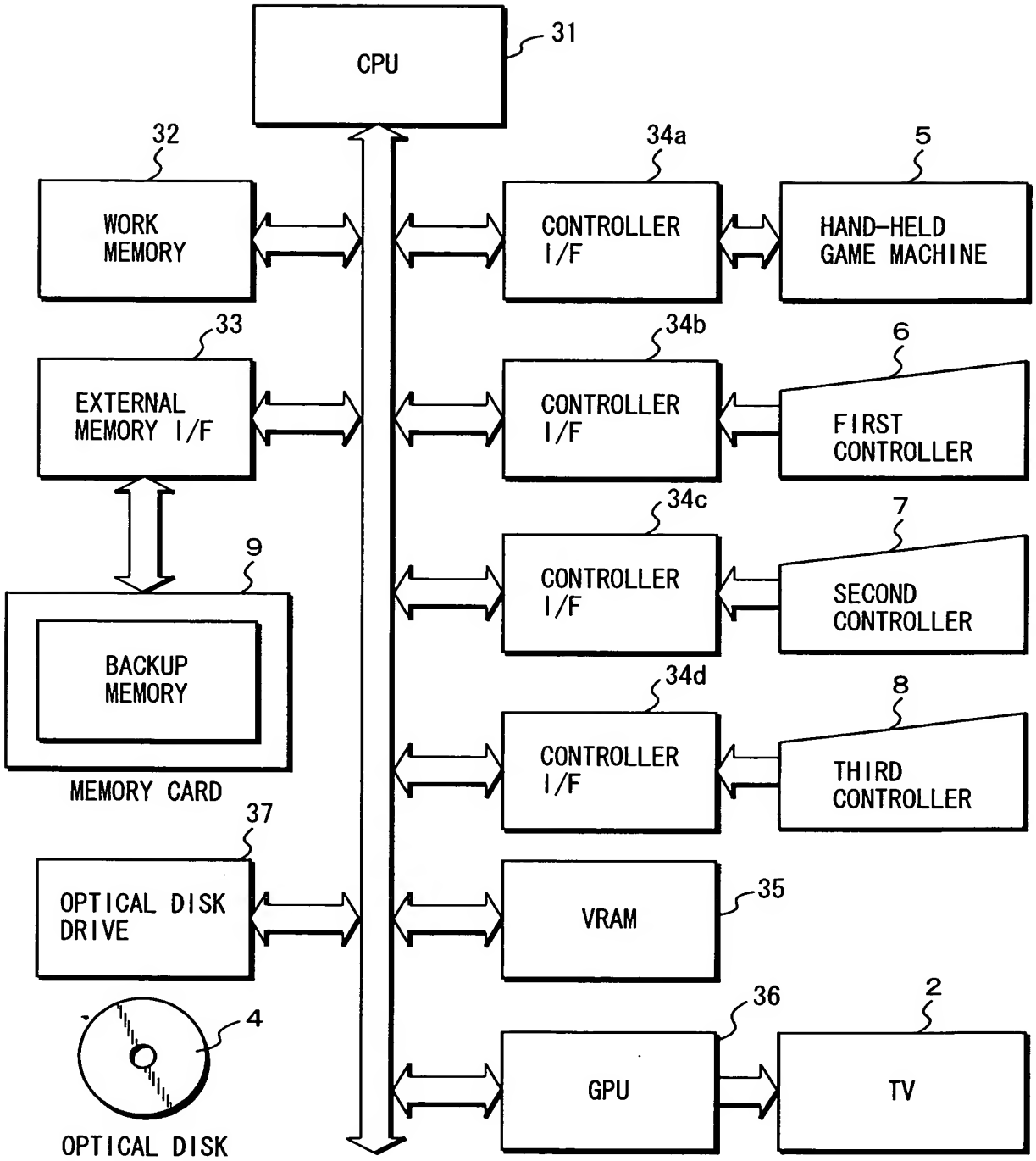

CPU
31
32
WORK MEMORY
34a
CONTROLLER I/F
5
HAND-HELD GAME MACHINE
33
EXTERNAL MEMORY I/F
34b
CONTROLLER I/F
6
FIRST CONTROLLER
34c
CONTROLLER I/F
7
SECOND CONTROLLER
9
BACKUP MEMORY
MEMORY CARD
34d
CONTROLLER I/F
8
THIRD CONTROLLER
37
OPTICAL DISK DRIVE
VRAM
35
4
OPTICAL DISK
36
GPU
2
TV

FIG. 3

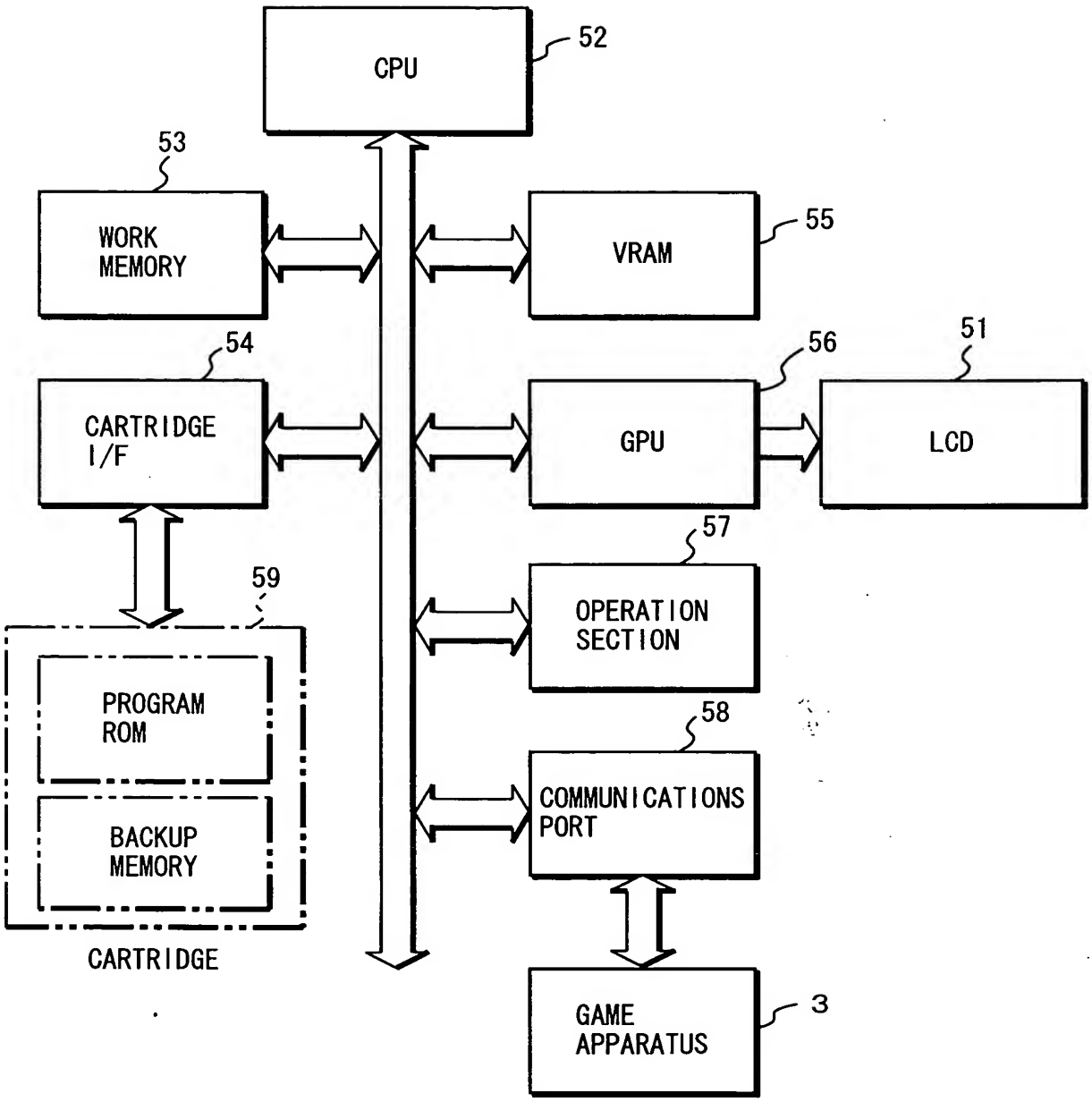

CPU
52
53
WORK MEMORY
VRAM
55
54
56
51
CARTRIDGE I/F
GPU
LCD
57
59
OPERATION SECTION
PROGRAM ROM
58
BACKUP MEMORY
COMMUNICATIONS PORT
CARTRIDGE
GAME APPARATUS
3

FIG. 4

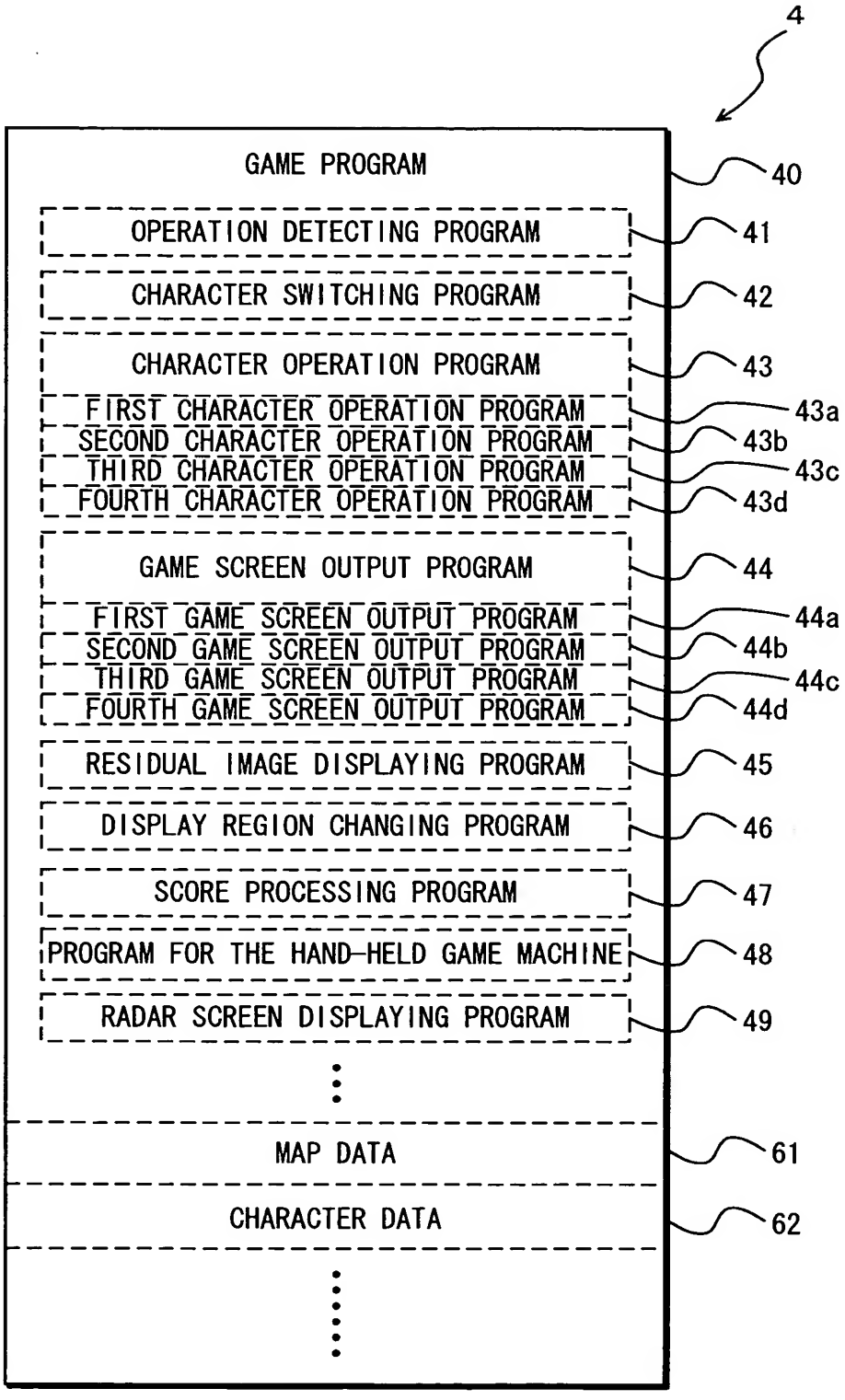

4
GAME PROGRAM
40
OPERATION DETECTING PROGRAM
41
CHARACTER SWITCHING PROGRAM
42
CHARACTER OPERATION PROGRAM
43
FIRST CHARACTER OPERATION PROGRAM
43a
SECOND CHARACTER OPERATION PROGRAM
43b
THIRD CHARACTER OPERATION PROGRAM
43c
FOURTH CHARACTER OPERATION PROGRAM
43d
GAME SCREEN OUTPUT PROGRAM
44
FIRST GAME SCREEN OUTPUT PROGRAM
44a
SECOND GAME SCREEN OUTPUT PROGRAM
44b
THIRD GAME SCREEN OUTPUT PROGRAM
44c
FOURTH GAME SCREEN OUTPUT PROGRAM
44d
RESIDUAL IMAGE DISPLAYING PROGRAM
45
DISPLAY REGION CHANGING PROGRAM
46
SCORE PROCESSING PROGRAM
47
PROGRAM FOR THE HAND-HELD GAME MACHINE
48
RADAR SCREEN DISPLAYING PROGRAM
49
MAP DATA
61
CHARACTER DATA
62

FIG. 5A

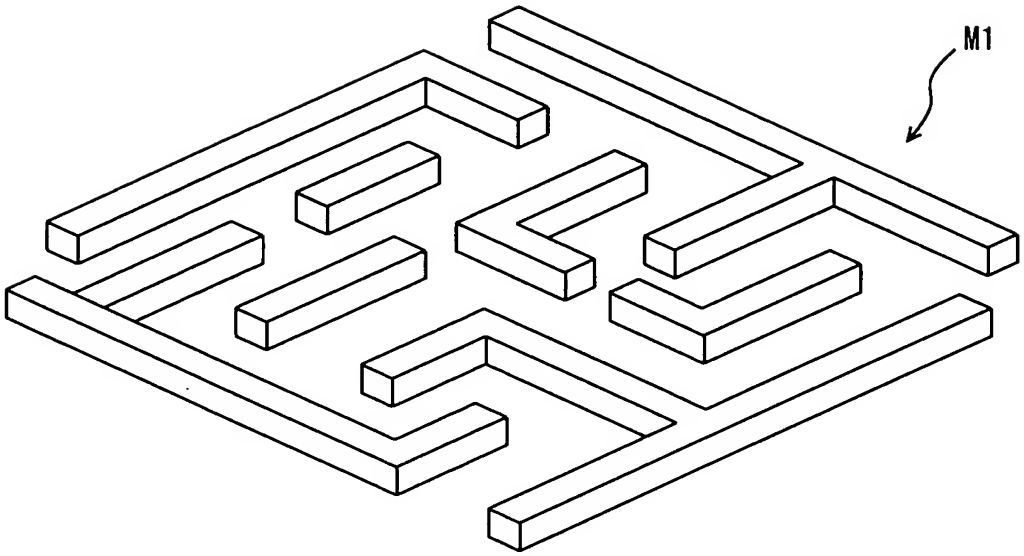


FIG. 5B

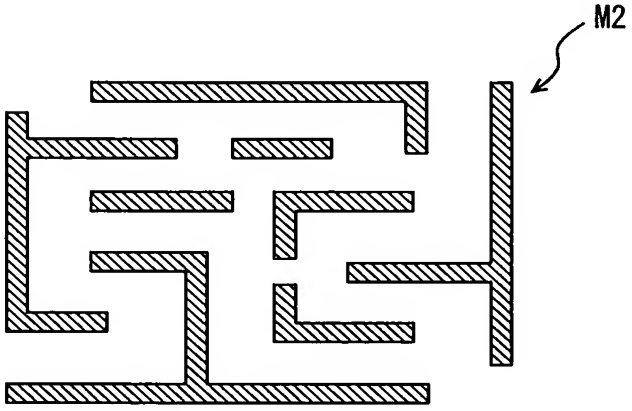


FIG. 5C

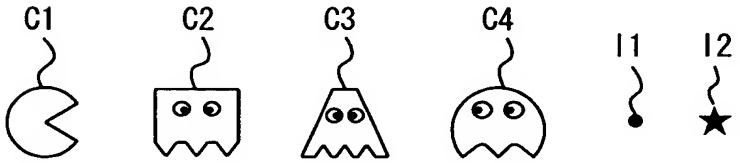


FIG. 6A

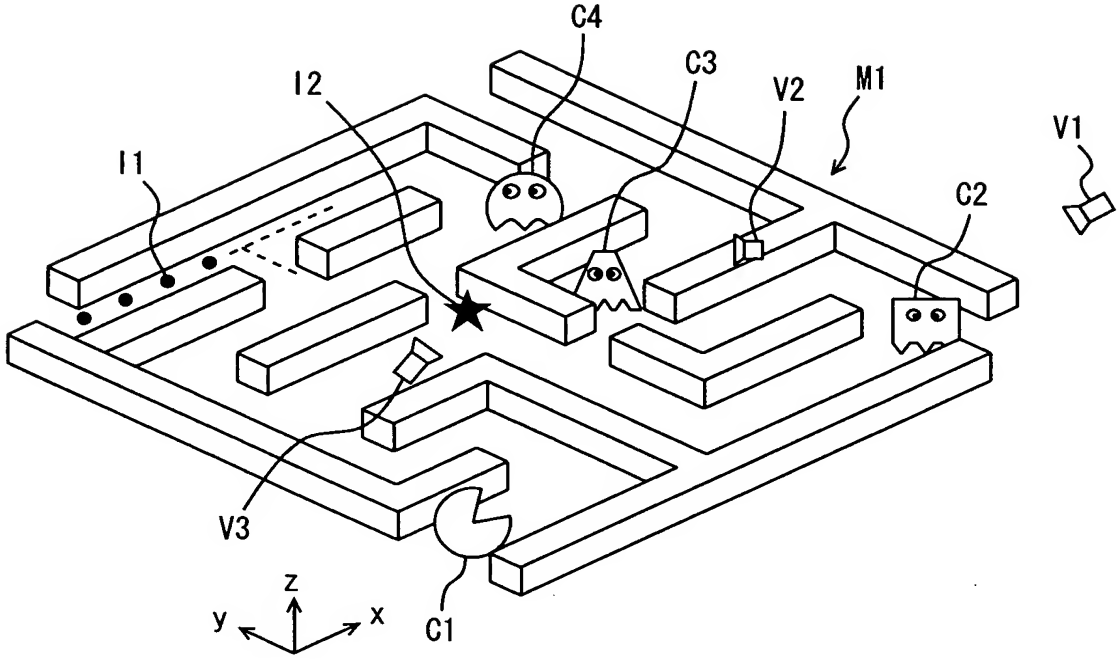


FIG. 6B

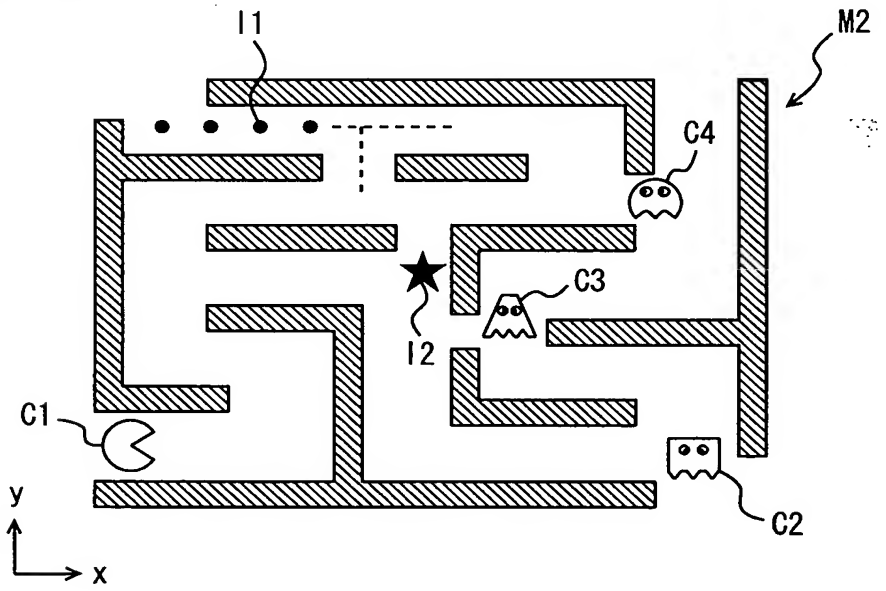


FIG. 7A

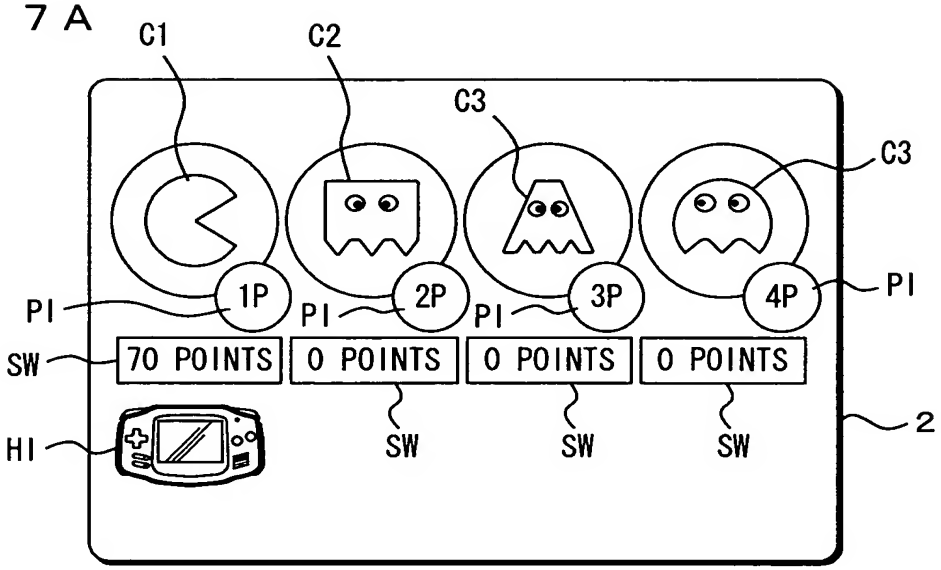


FIG. 7B

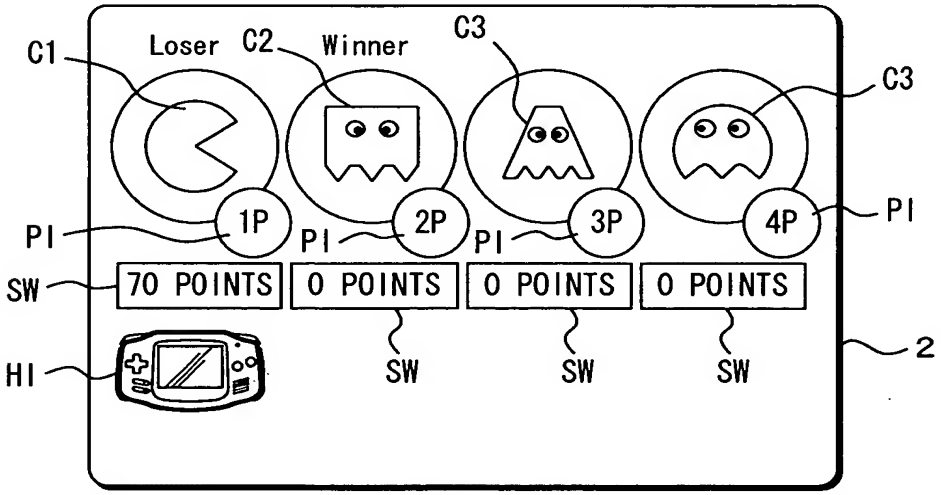


FIG. 7C

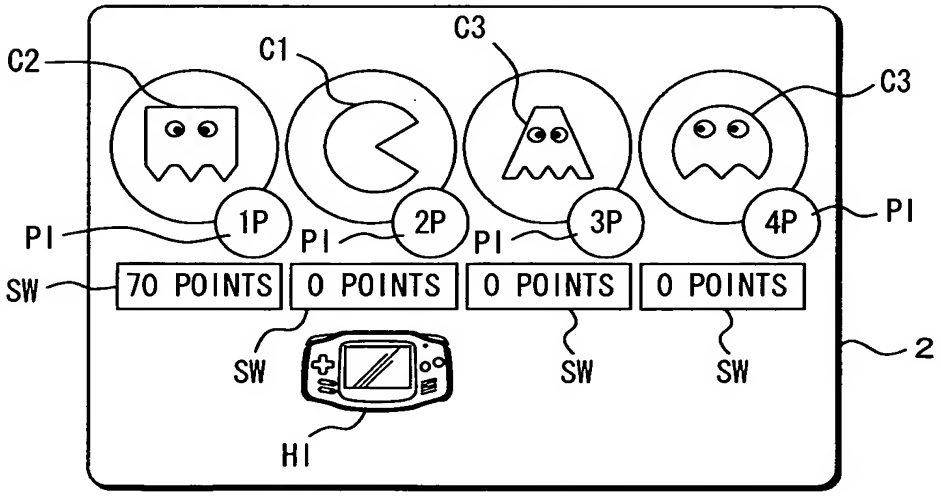


FIG. 8A

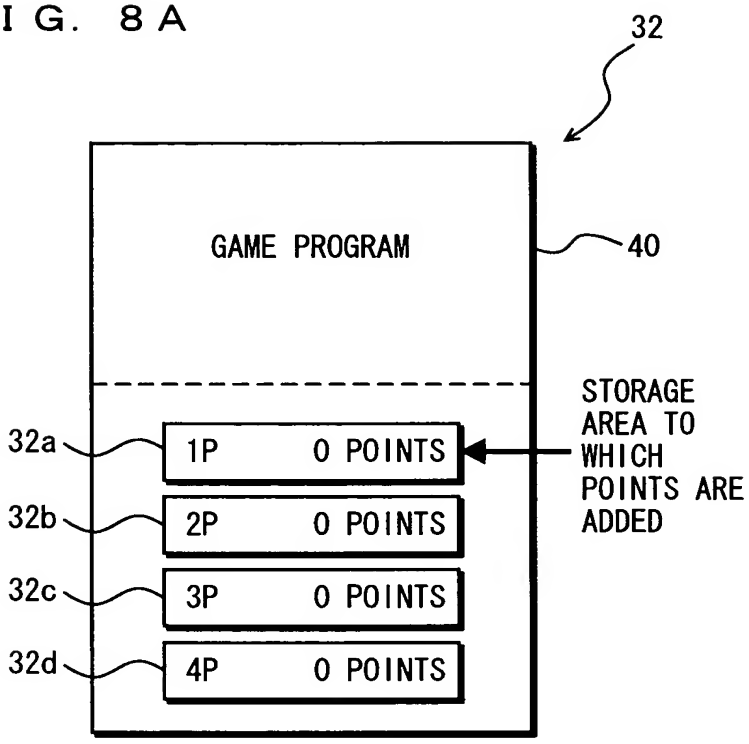

32
GAME PROGRAM
40
STORAGE AREA TO WHICH POINTS ARE ADDED
32a
1P 0 POINTS
32b
2P 0 POINTS
32c
3P 0 POINTS
32d
4P 0 POINTS

FIG. 8B

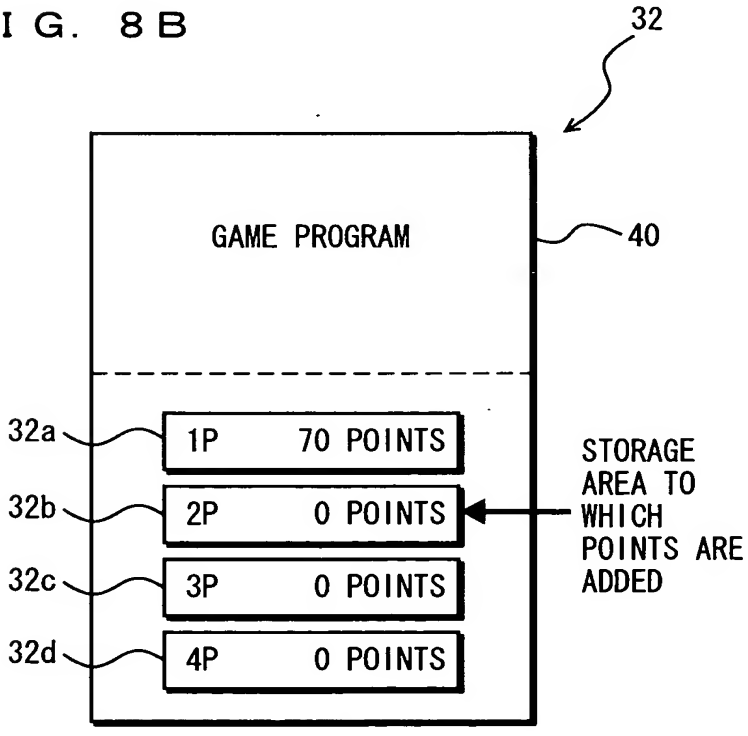

32
GAME PROGRAM
40
STORAGE AREA TO WHICH POINTS ARE ADDED
32a
1P 70 POINTS
32b
2P 0 POINTS
32c
3P 0 POINTS
32d
4P 0 POINTS

FIG. 9A

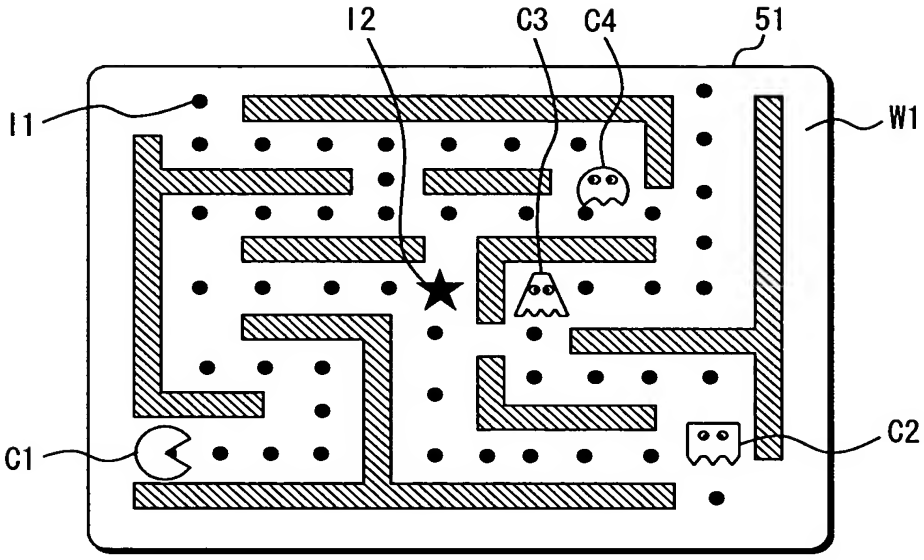

I2
C3
C4
51
I1
W1
C1
C2

FIG. 9B

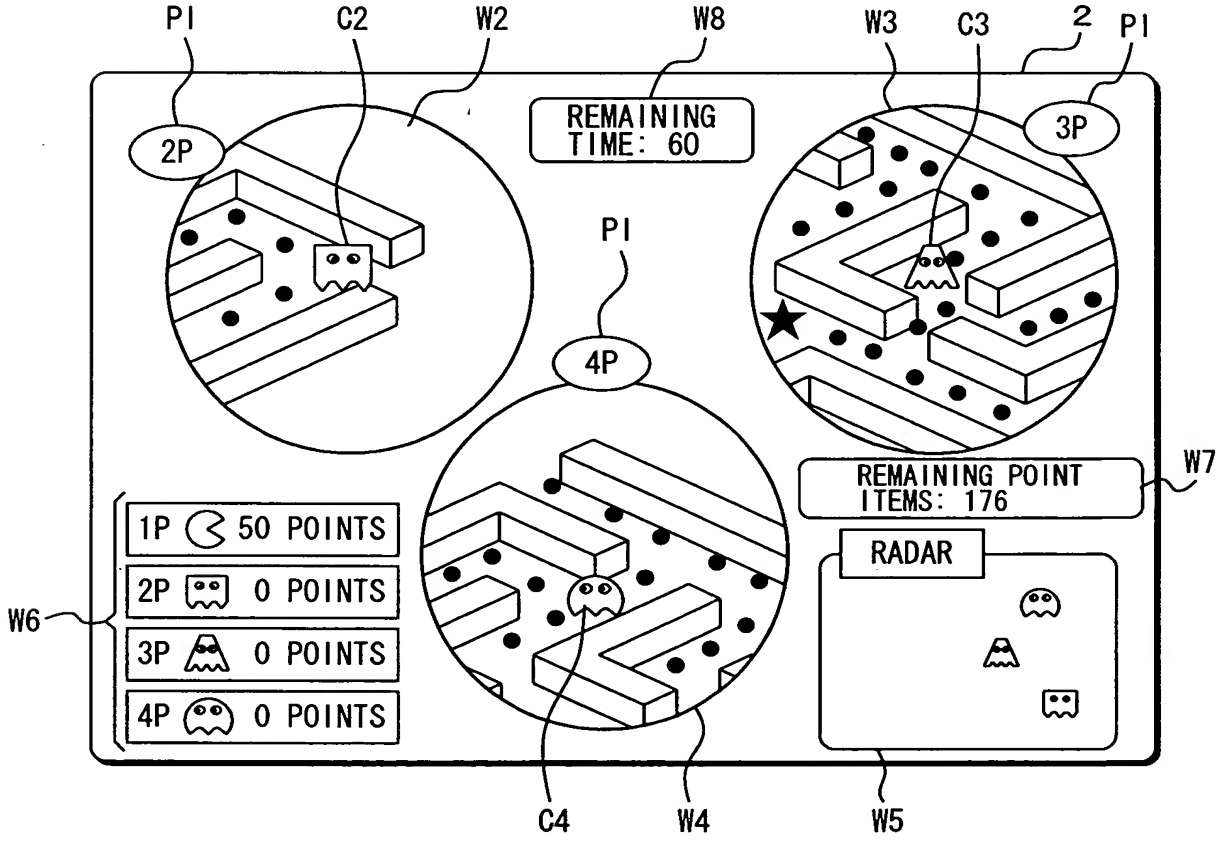

P1
C2
W2
W8
W3
C3
2
P1
REMAINING TIME: 60
2P
3P
P1
4P
REMAINING POINT ITEMS: 176
W7
RADAR
1P 50 POINTS
2P 0 POINTS
3P 0 POINTS
4P 0 POINTS
W6
C4
W4
W5

FIG. 10

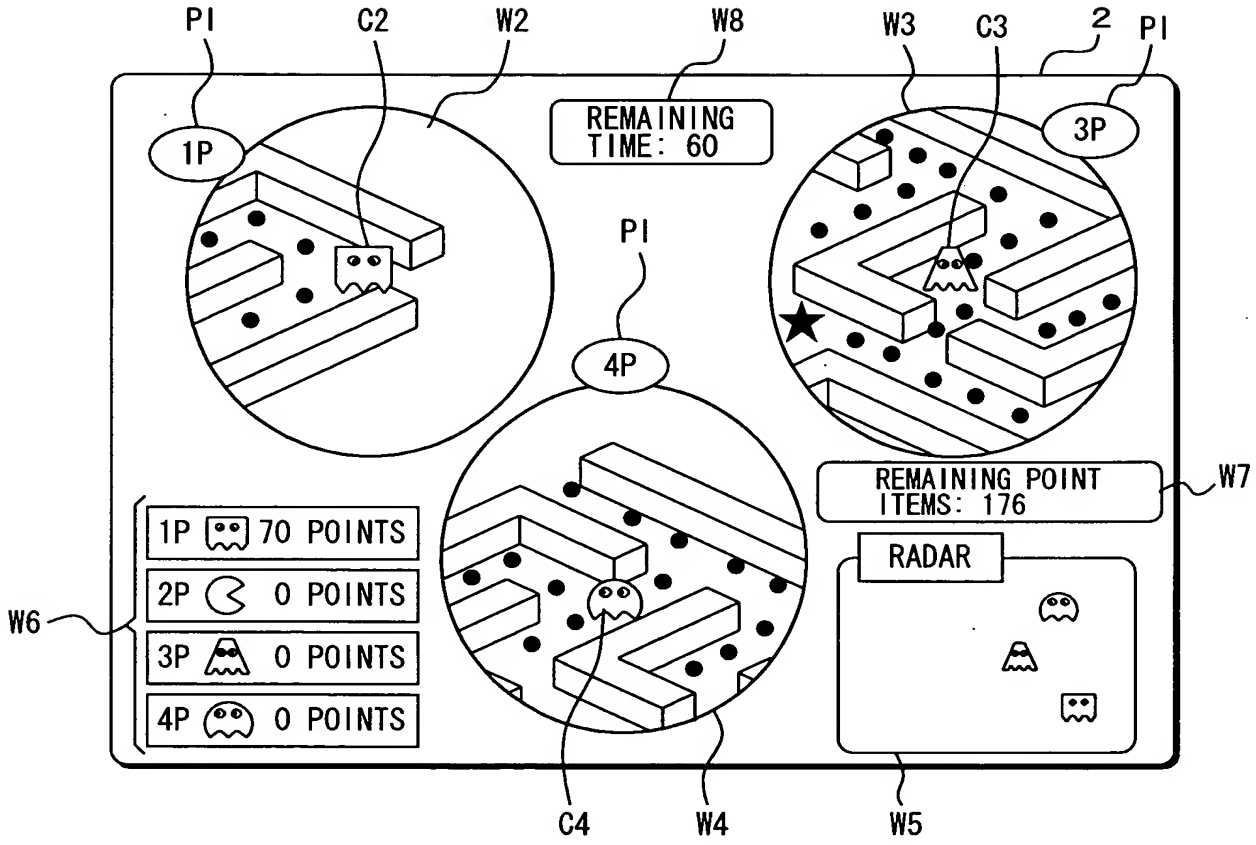
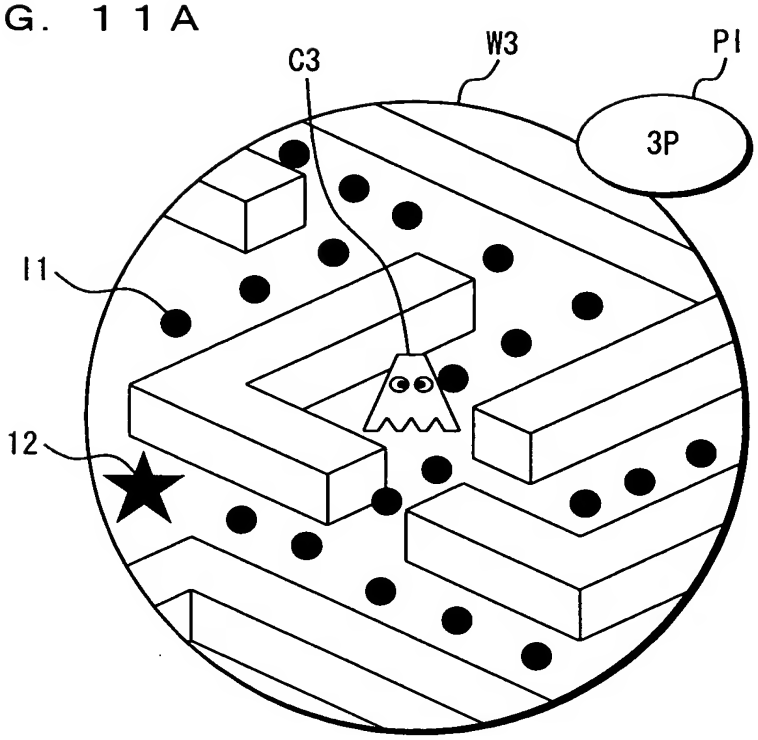
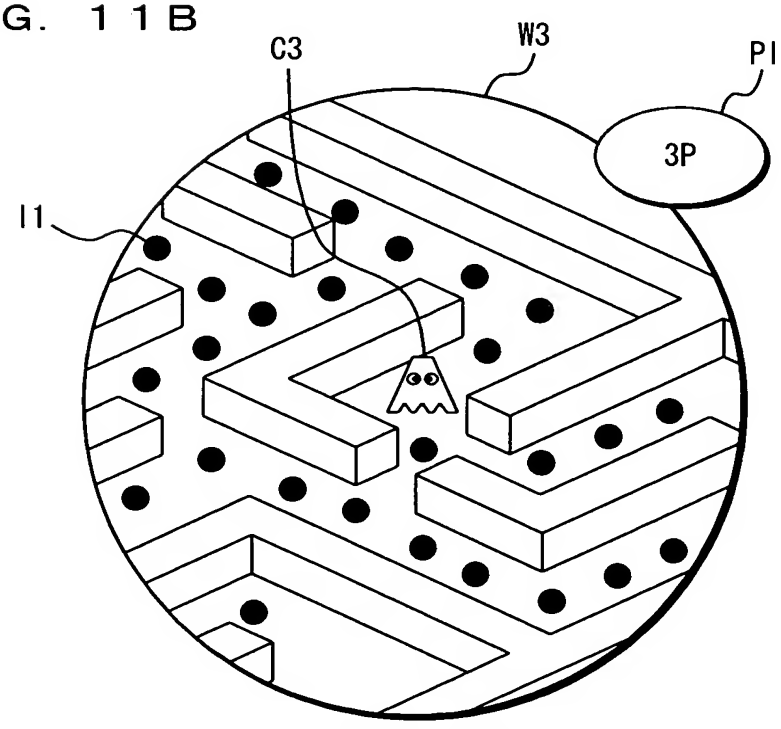

P1
C2
W2
W8
W3
C3
2
P1
1P
REMAINING
TIME: 60
3P
P1
4P
REMAINING POINT
ITEMS: 176
W7
RADAR
1P 70 POINTS
2P 0 POINTS
3P 0 POINTS
4P 0 POINTS
W6
C4
W4
W5

FIG. 11A



USUAL DISPLAYED EXTENT

FIG. 11B



DISPLAYED EXTENT WHEN SPECIAL ITEM IS OBTAINED

FIG. 12A

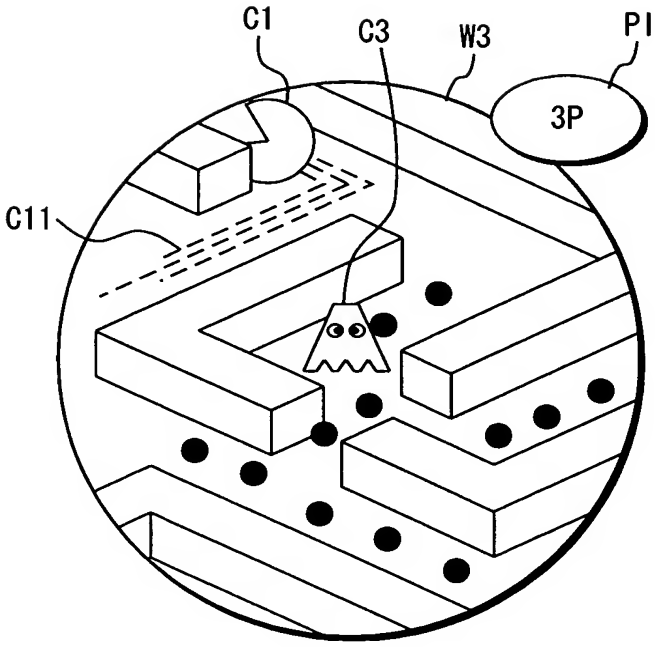


FIG. 12B

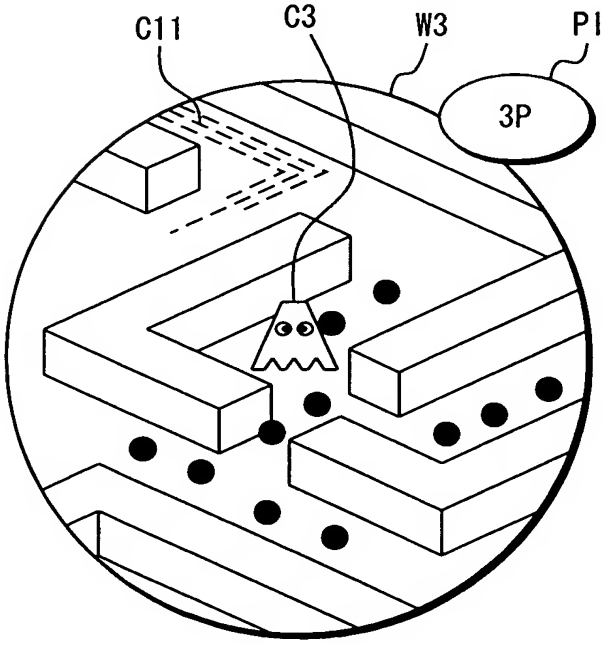


FIG. 13

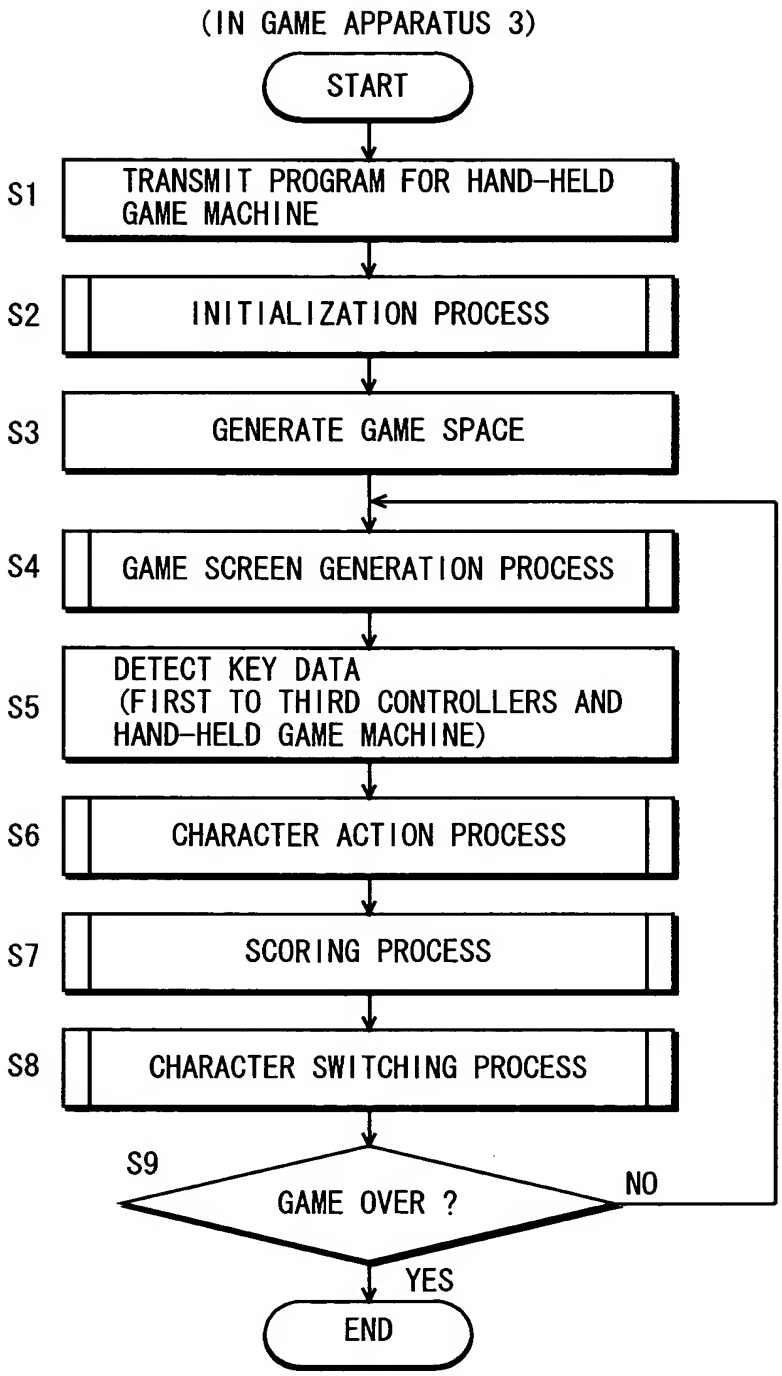

(IN GAME APPARATUS 3)
START
S1
TRANSMIT PROGRAM FOR HAND-HELD GAME MACHINE
S2
INITIALIZATION PROCESS
S3
GENERATE GAME SPACE
S4
GAME SCREEN GENERATION PROCESS
S5
DETECT KEY DATA (FIRST TO THIRD CONTROLLERS AND HAND-HELD GAME MACHINE)
S6
CHARACTER ACTION PROCESS
S7
SCORING PROCESS
S8
CHARACTER SWITCHING PROCESS
S9
GAME OVER ?
NO
YES
END

FIG. 14

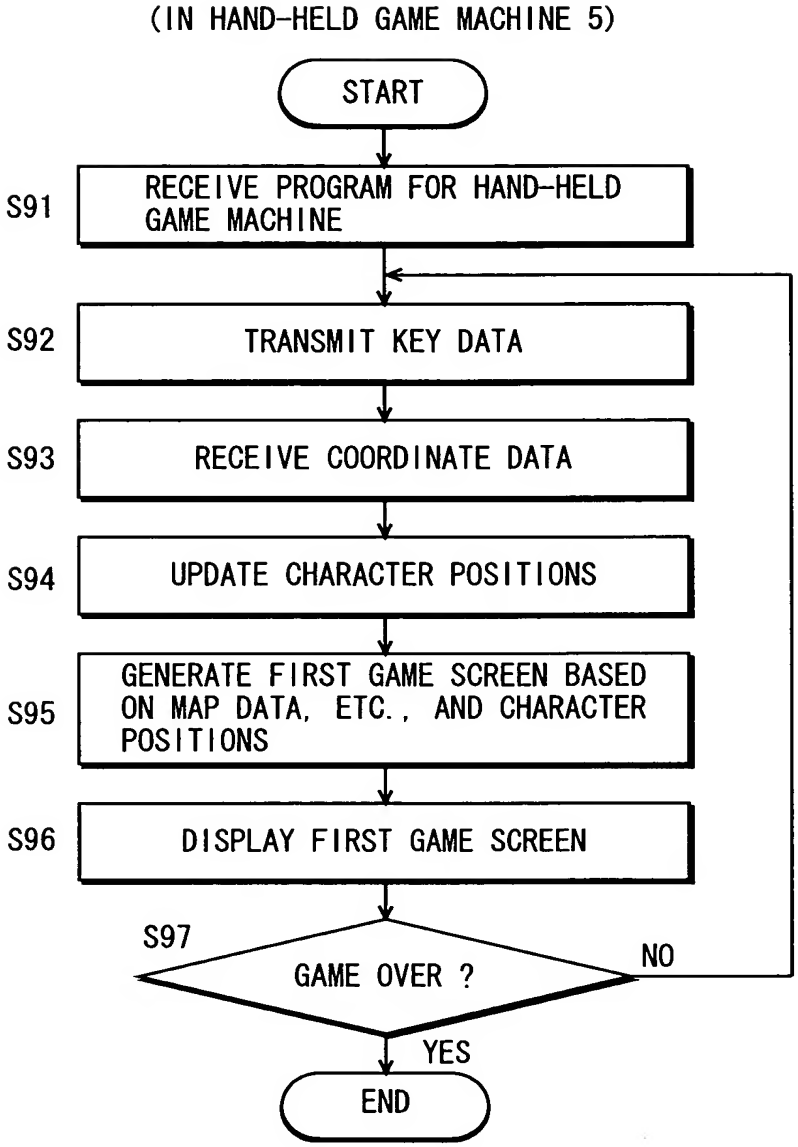

(IN HAND-HELD GAME MACHINE 5)
START
S91
RECEIVE PROGRAM FOR HAND-HELD GAME MACHINE
S92
TRANSMIT KEY DATA
S93
RECEIVE COORDINATE DATA
S94
UPDATE CHARACTER POSITIONS
S95
GENERATE FIRST GAME SCREEN BASED ON MAP DATA, ETC., AND CHARACTER POSITIONS
S96
DISPLAY FIRST GAME SCREEN
S97
GAME OVER ?
NO
YES
END

FIG. 15

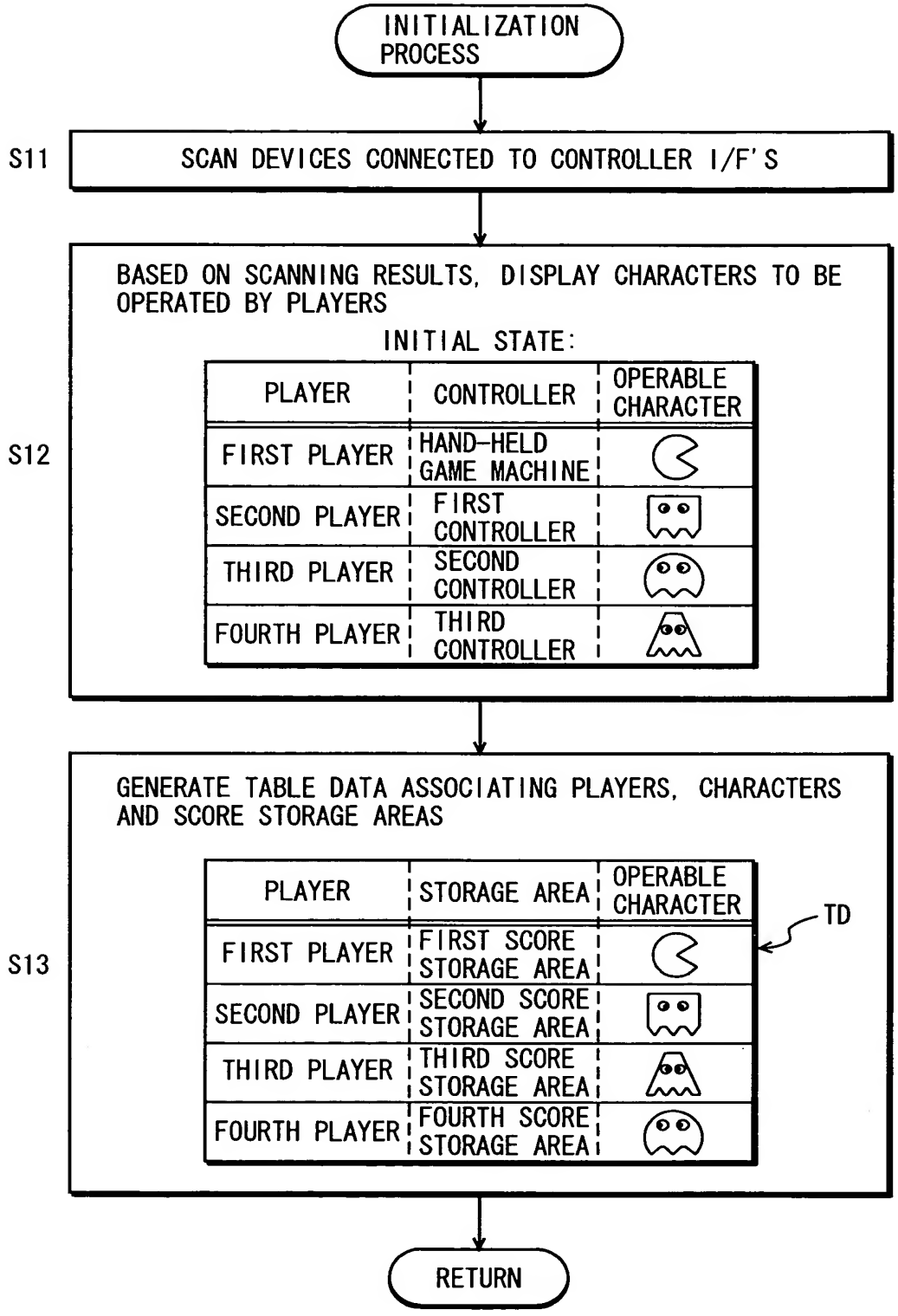

INITIALIZATION PROCESS
S11
SCAN DEVICES CONNECTED TO CONTROLLER I/F'S
BASED ON SCANNING RESULTS, DISPLAY CHARACTERS TO BE OPERATED BY PLAYERS
INITIAL STATE:
S12
PLAYER
CONTROLLER
OPERABLE CHARACTER
FIRST PLAYER
HAND-HELD GAME MACHINE
SECOND PLAYER
FIRST CONTROLLER
THIRD PLAYER
SECOND CONTROLLER
FOURTH PLAYER
THIRD CONTROLLER
GENERATE TABLE DATA ASSOCIATING PLAYERS, CHARACTERS AND SCORE STORAGE AREAS
S13
PLAYER
STORAGE AREA
OPERABLE CHARACTER
TD
FIRST PLAYER
FIRST SCORE STORAGE AREA
SECOND PLAYER
SECOND SCORE STORAGE AREA
THIRD PLAYER
THIRD SCORE STORAGE AREA
FOURTH PLAYER
FOURTH SCORE STORAGE AREA
RETURN

FIG. 16

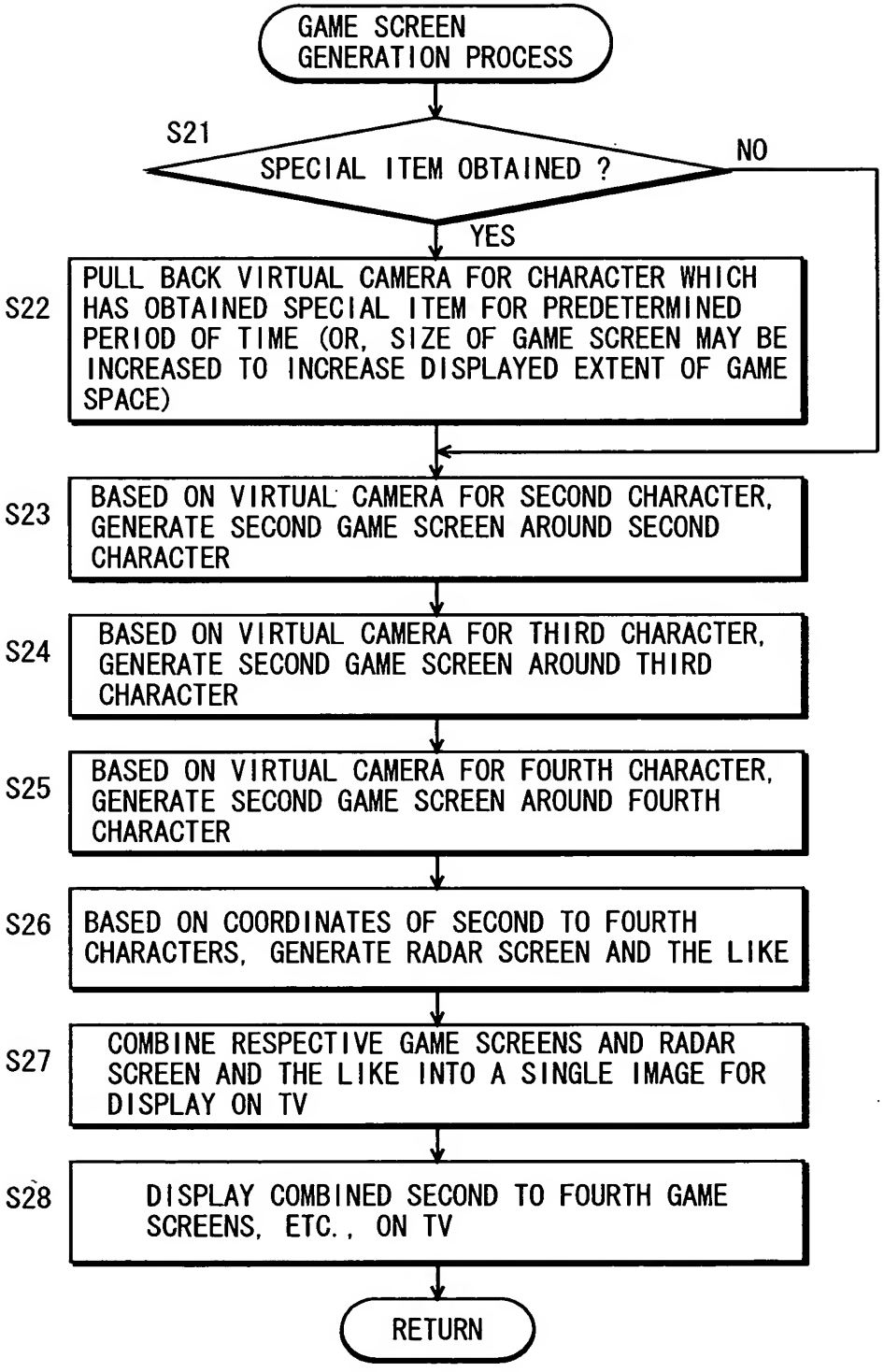

GAME SCREEN GENERATION PROCESS
S21
SPECIAL ITEM OBTAINED ?
NO
YES
S22
PULL BACK VIRTUAL CAMERA FOR CHARACTER WHICH HAS OBTAINED SPECIAL ITEM FOR PREDETERMINED PERIOD OF TIME (OR, SIZE OF GAME SCREEN MAY BE INCREASED TO INCREASE DISPLAYED EXTENT OF GAME SPACE)
S23
BASED ON VIRTUAL CAMERA FOR SECOND CHARACTER, GENERATE SECOND GAME SCREEN AROUND SECOND CHARACTER
S24
BASED ON VIRTUAL CAMERA FOR THIRD CHARACTER, GENERATE SECOND GAME SCREEN AROUND THIRD CHARACTER
S25
BASED ON VIRTUAL CAMERA FOR FOURTH CHARACTER, GENERATE SECOND GAME SCREEN AROUND FOURTH CHARACTER
S26
BASED ON COORDINATES OF SECOND TO FOURTH CHARACTERS, GENERATE RADAR SCREEN AND THE LIKE
S27
COMBINE RESPECTIVE GAME SCREENS AND RADAR SCREEN AND THE LIKE INTO A SINGLE IMAGE FOR DISPLAY ON TV
S28
DISPLAY COMBINED SECOND TO FOURTH GAME SCREENS, ETC., ON TV
RETURN

FIG. 17

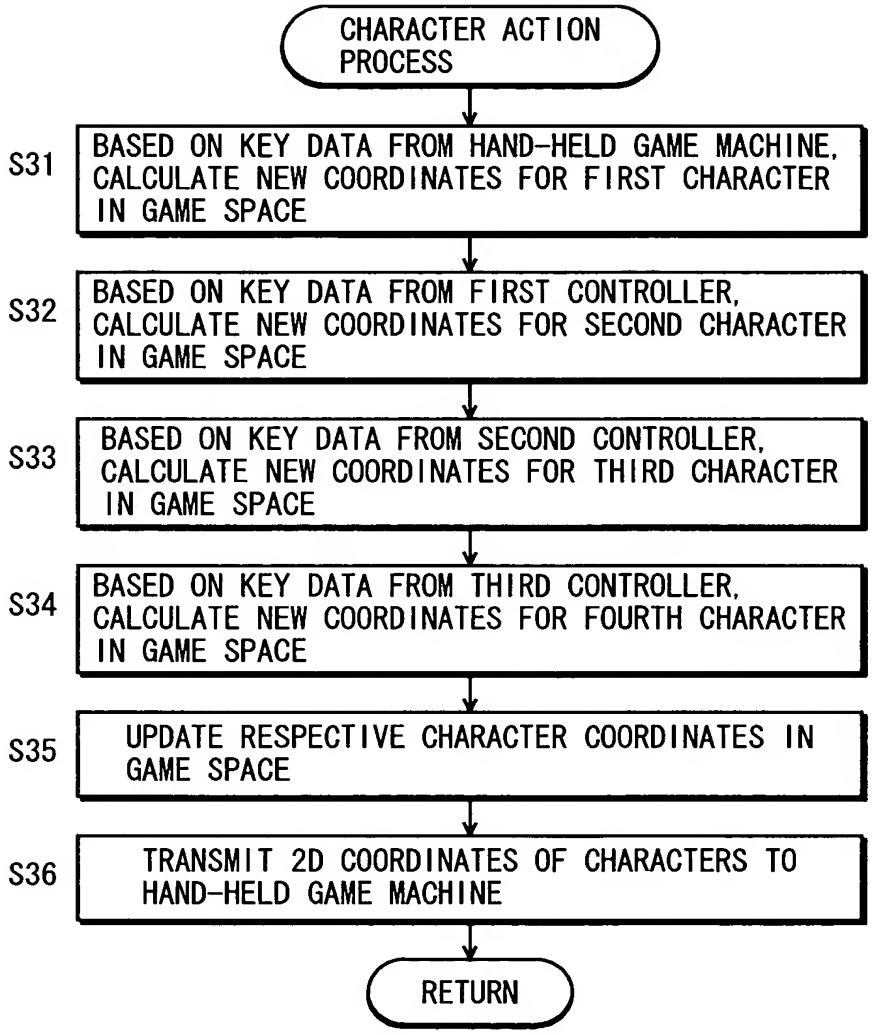

CHARACTER ACTION PROCESS
S31
BASED ON KEY DATA FROM HAND-HELD GAME MACHINE, CALCULATE NEW COORDINATES FOR FIRST CHARACTER IN GAME SPACE
S32
BASED ON KEY DATA FROM FIRST CONTROLLER, CALCULATE NEW COORDINATES FOR SECOND CHARACTER IN GAME SPACE
S33
BASED ON KEY DATA FROM SECOND CONTROLLER, CALCULATE NEW COORDINATES FOR THIRD CHARACTER IN GAME SPACE
S34
BASED ON KEY DATA FROM THIRD CONTROLLER, CALCULATE NEW COORDINATES FOR FOURTH CHARACTER IN GAME SPACE
S35
UPDATE RESPECTIVE CHARACTER COORDINATES IN GAME SPACE
S36
TRANSMIT 2D COORDINATES OF CHARACTERS TO HAND-HELD GAME MACHINE
RETURN

FIG. 18

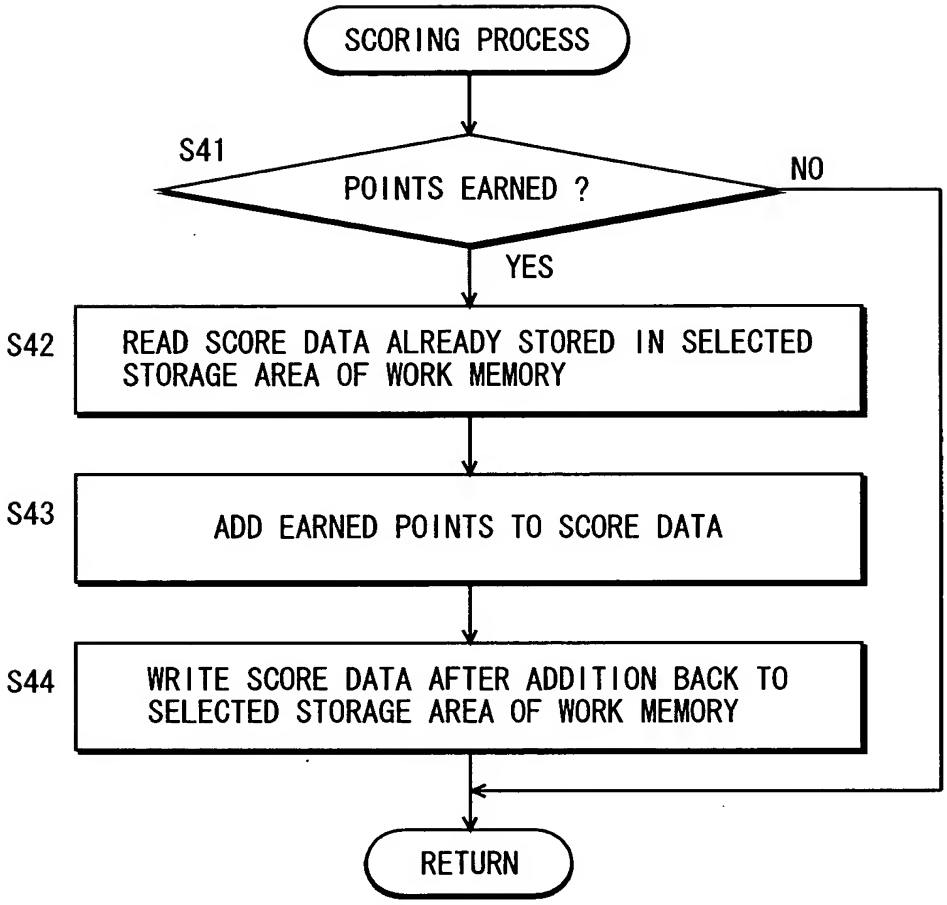

SCORING PROCESS
S41
POINTS EARNED ?
NO
YES
S42
READ SCORE DATA ALREADY STORED IN SELECTED STORAGE AREA OF WORK MEMORY
S43
ADD EARNED POINTS TO SCORE DATA
S44
WRITE SCORE DATA AFTER ADDITION BACK TO SELECTED STORAGE AREA OF WORK MEMORY
RETURN

FIG. 19

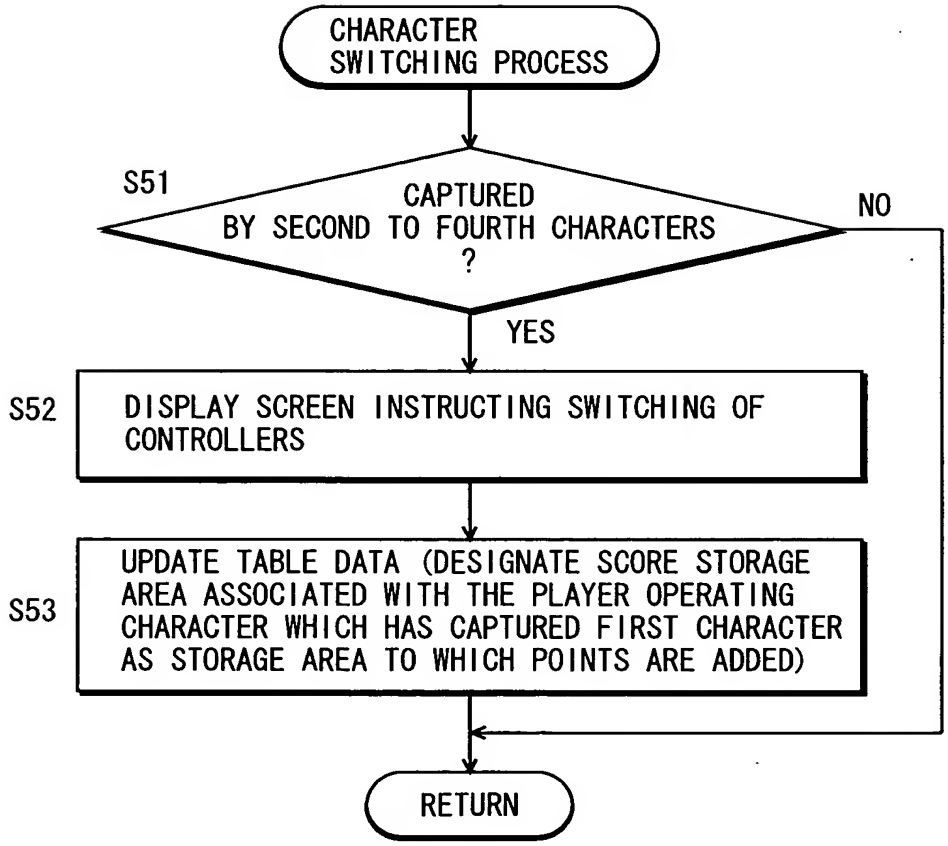

CHARACTER SWITCHING PROCESS
S51
CAPTURED BY SECOND TO FOURTH CHARACTERS ?
NO
YES
S52
DISPLAY SCREEN INSTRUCTING SWITCHING OF CONTROLLERS
S53
UPDATE TABLE DATA (DESIGNATE SCORE STORAGE AREA ASSOCIATED WITH THE PLAYER OPERATING CHARACTER WHICH HAS CAPTURED FIRST CHARACTER AS STORAGE AREA TO WHICH POINTS ARE ADDED)
RETURN

FIG. 20

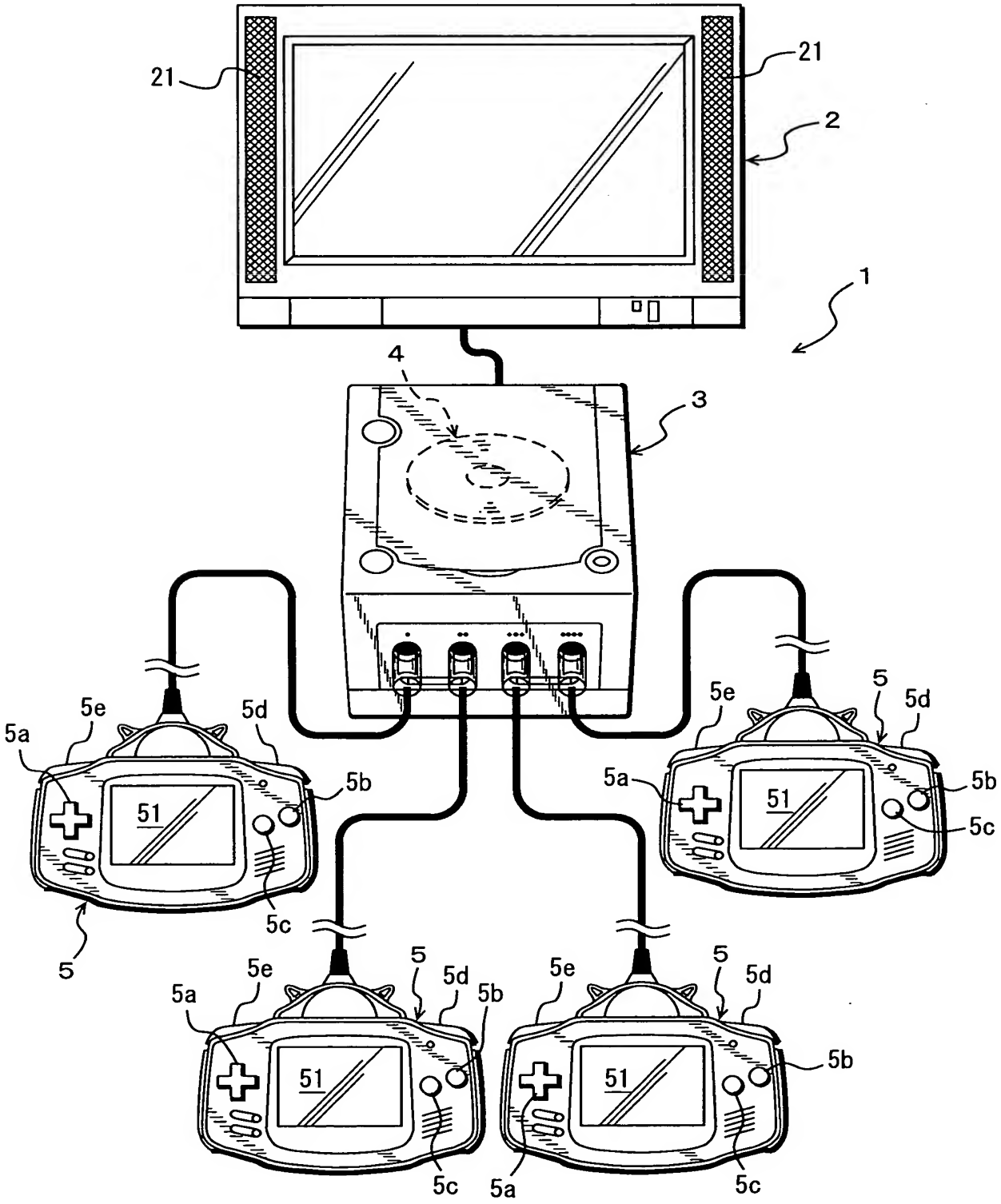

21
21
2
1
4
3
5a
5e
5d
5b
51
5c
5
5
5e
5d
5a
5b
51
5c
5
5a
5e
5d
5b
51
5c
5
5e
5d
5b
51
5a
5c

FIG. 21A

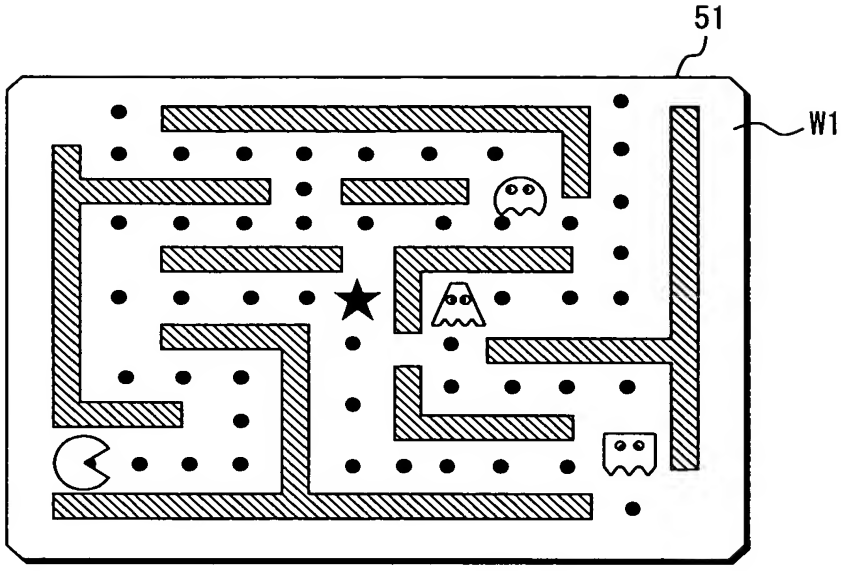


FIG. 21B

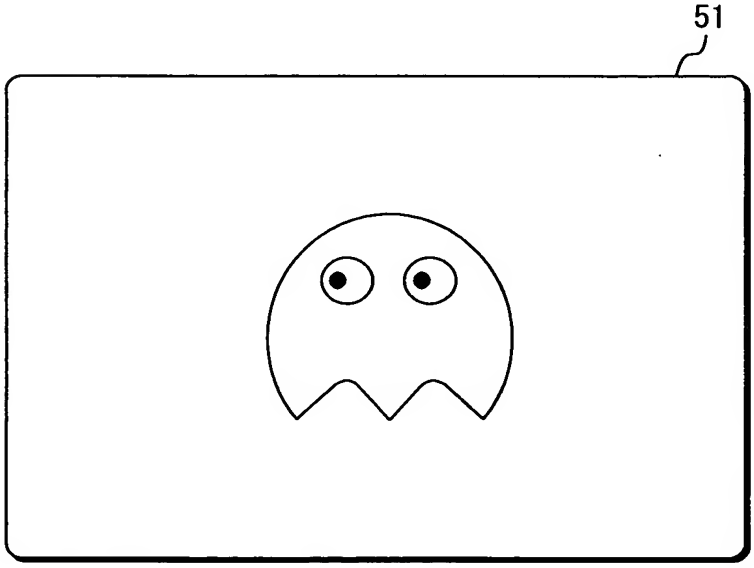


FIG. 22

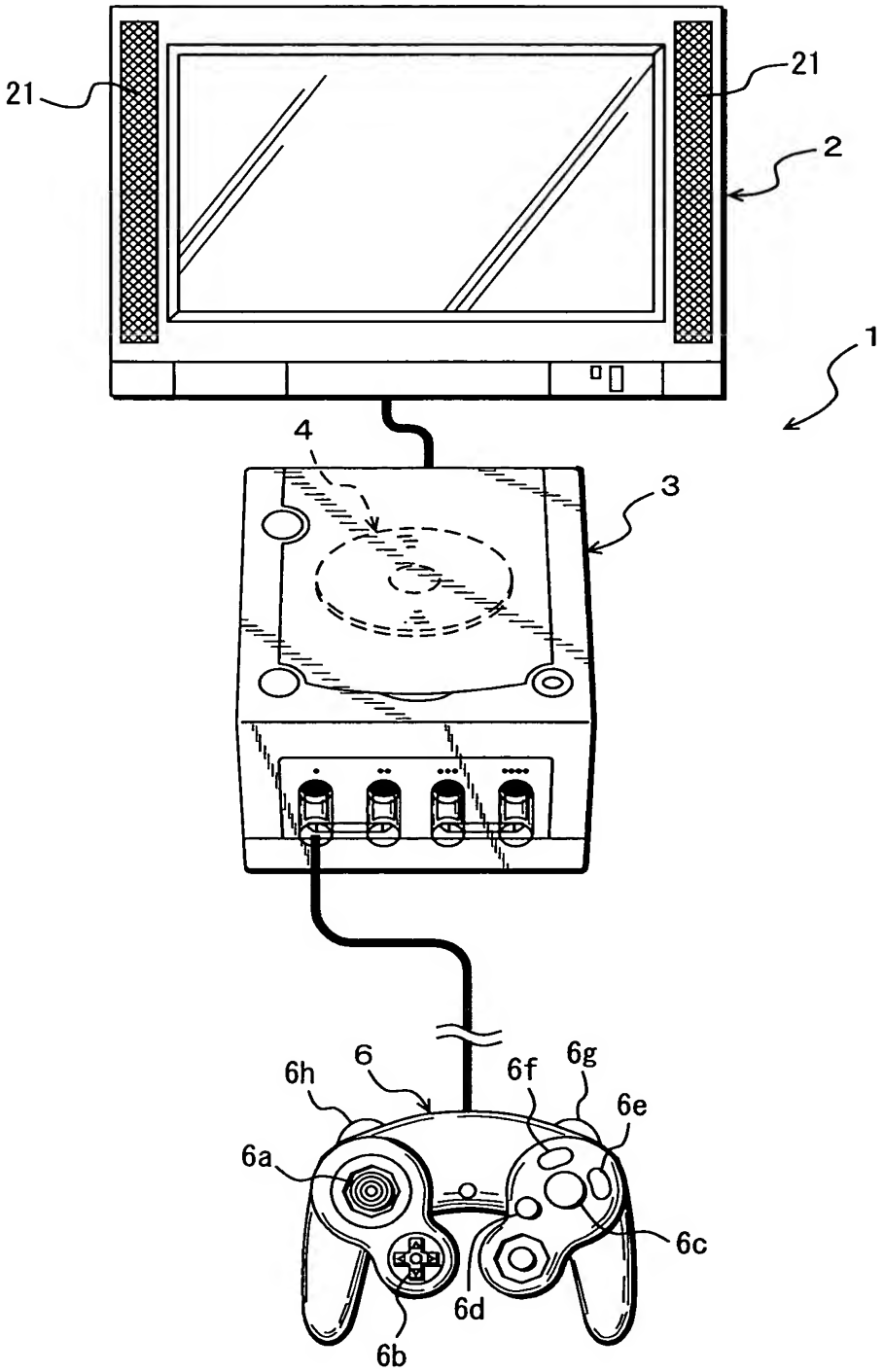


FIG. 23A

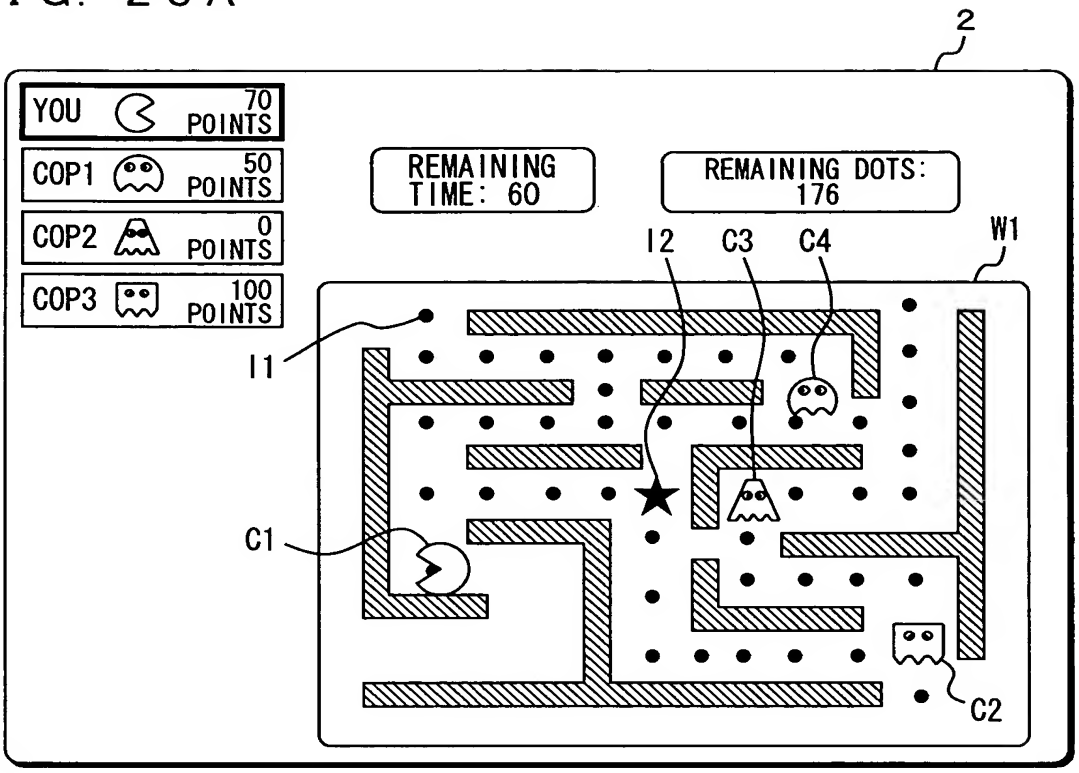


FIG. 23B

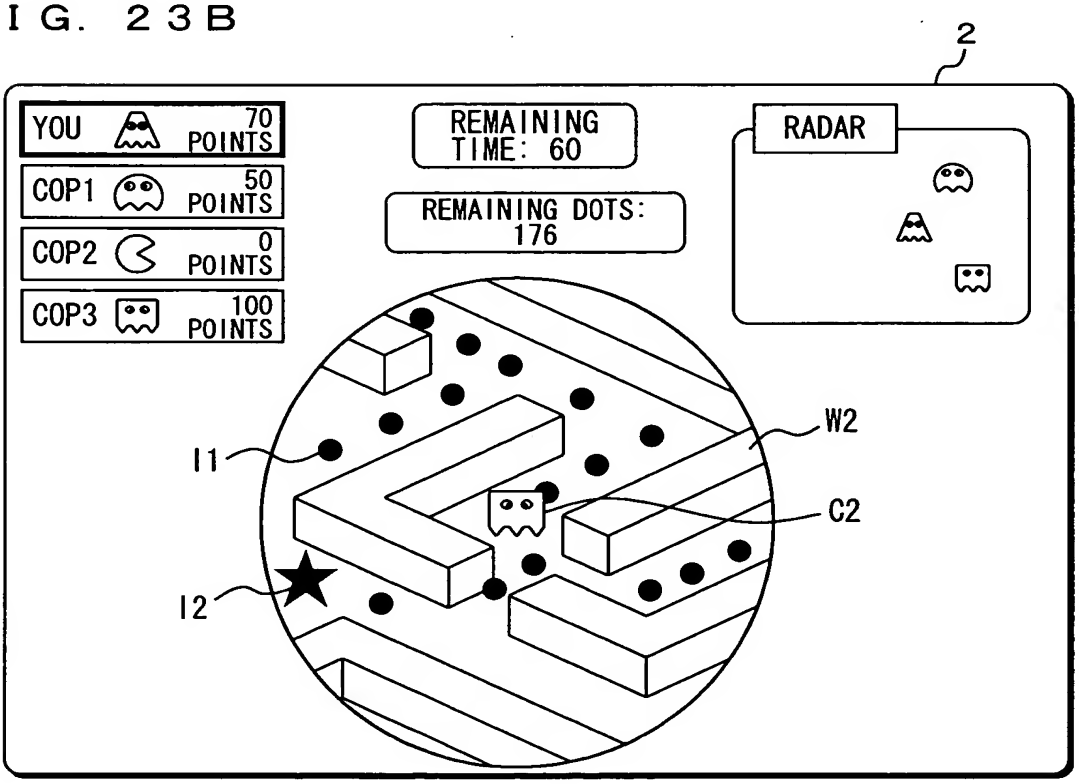


FIG. 24

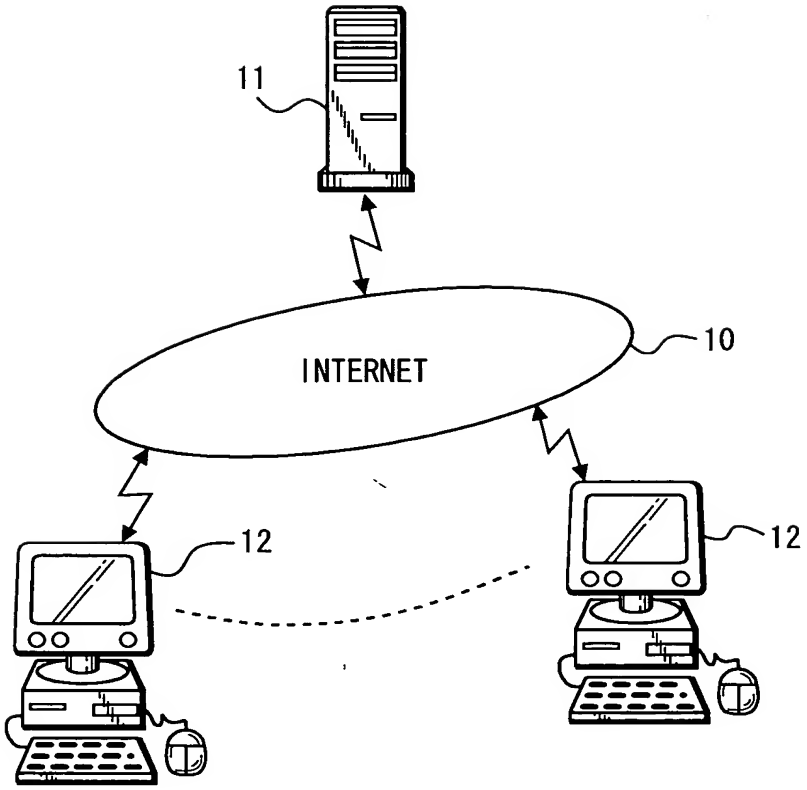


FIG. 25A

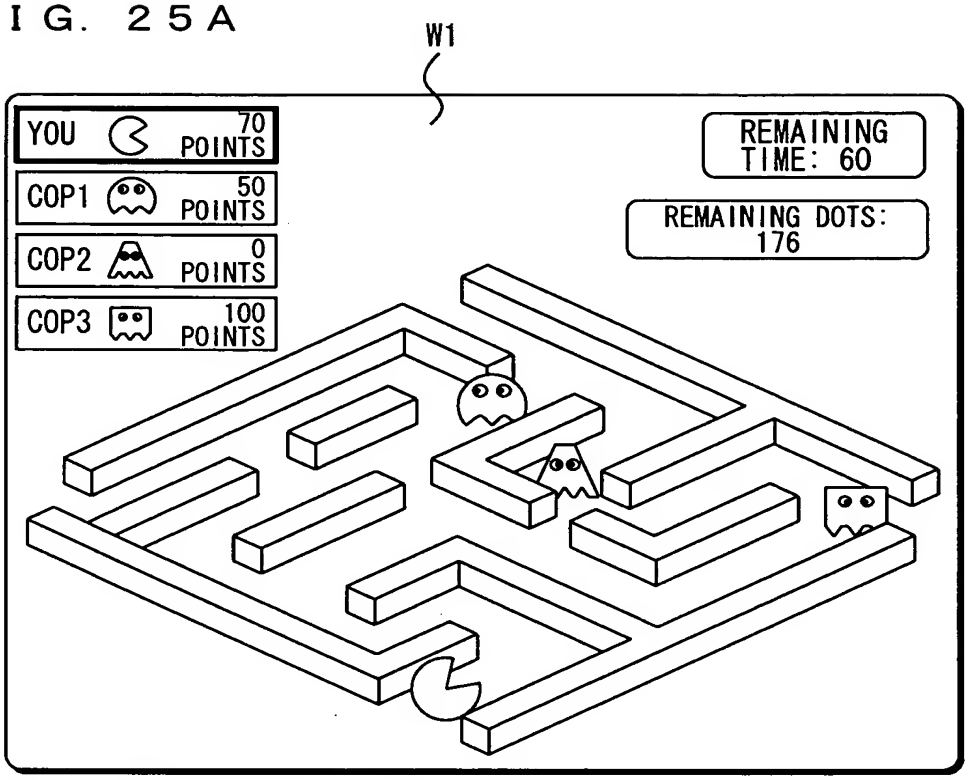


FIG. 25B

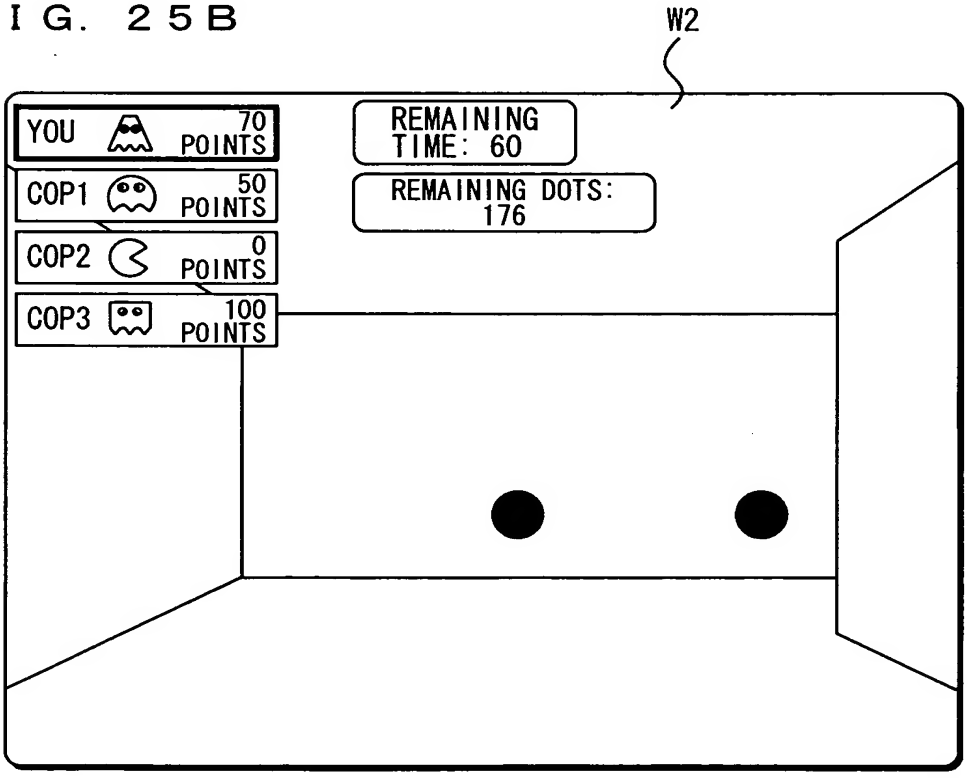


FIG. 26A

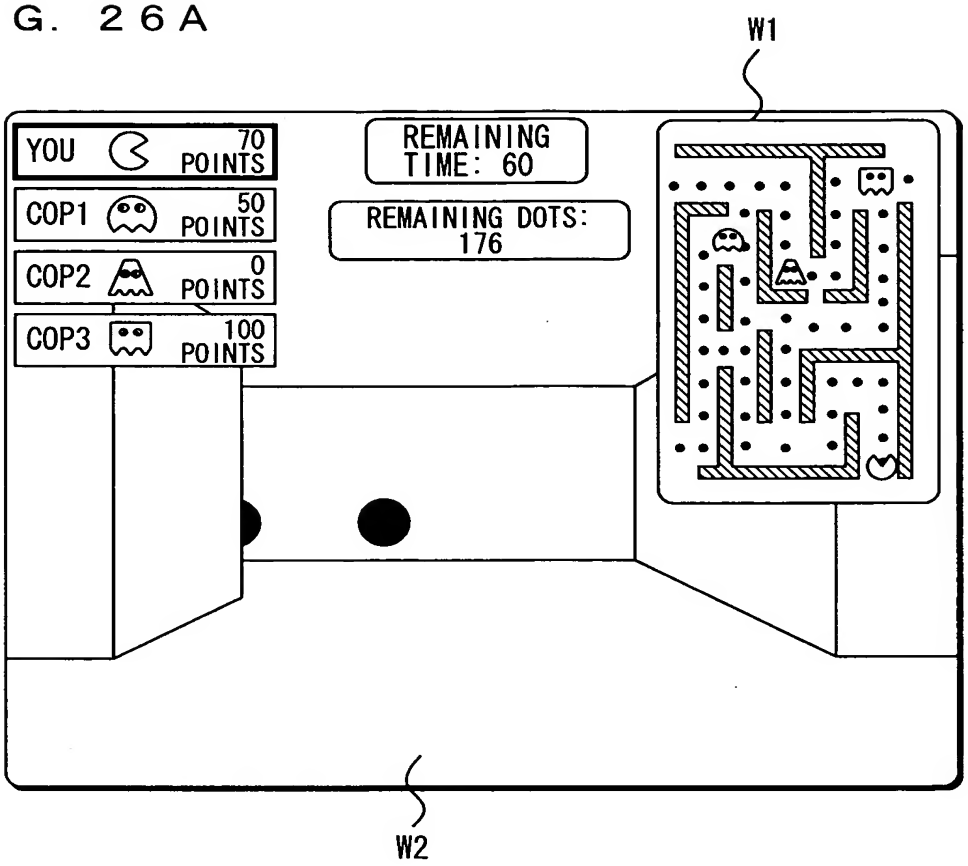
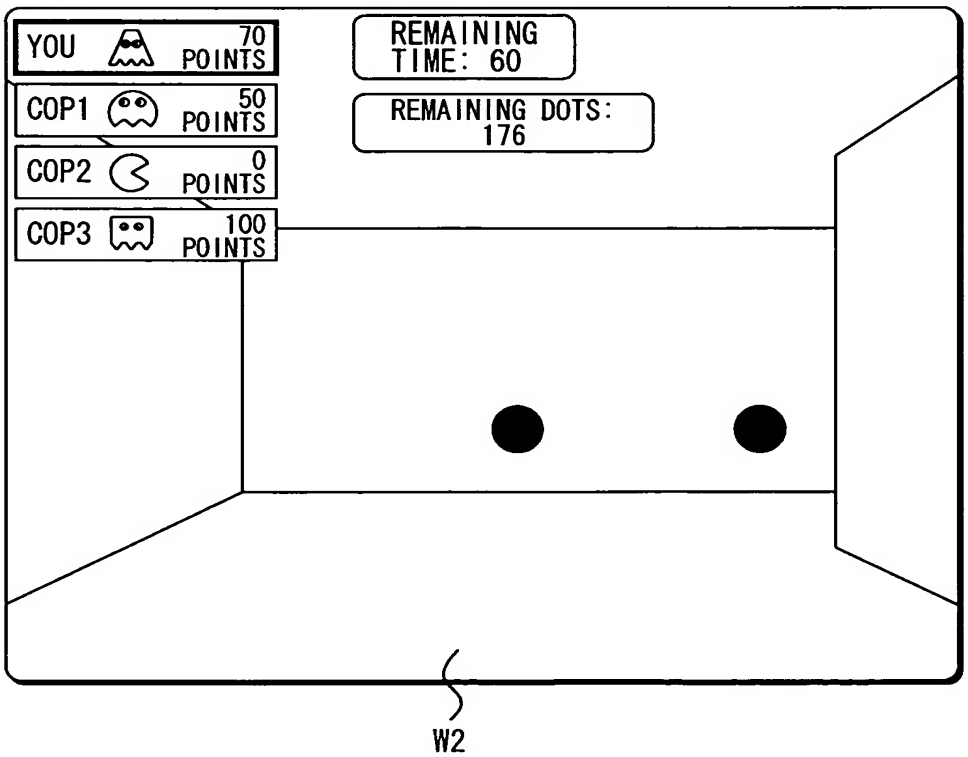



FIG. 26B